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Division of Mycology and Disease Survey

Volume XXII Number 23

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BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XXII Number 23

December 15, 1938

IN THIS ISSUE

To our readers, page 456.

Reiner Bonde, page 457, contributes a report on the incidence of potato diseases in Aroostook County, Maine, in 1938, including leaf roll and other virus diseases, late blight, the bacterial ring rot, and pink rot caused by Phytophthora spp.

Keeping quality of Wisconsin cranberries is poor this year, according to Neil E. Stevens, page 461.

Recurrence of the Dutch elm disease in West Virginia is reported by the Bureau of Entomology and Plant Quarantine, page 462.

Harold T. Cook reports that spinach downy mildew appeared later than it usually does in eastern Virginia, this fall, page 462.

Ocean spray blown by the recent hurricane has injured various trees in Maine, according to Donald Folsom and M. T. Hilborn, page 463.

There has been a considerable development of some rusts on cereals in Kansas this fall, according to C. O. Johnston, page 463.

Results of 1938 inspection for peach yellows in Pennsylvania are reported by K. W. Lauer, page 463.

November weather, page 464.

TO OUR READERS

Volume 22 of the Reporter is concluded with this issue except for the index, Number 24, which will appear on December 31. Viewing the volume in retrospect the staff admits a mild sense of satisfaction and hopes that you have found things of interest and value in its pages.

It has been a pleasure to receive the contributions you have submitted, and we are grateful for the responses many of you have so generously made to our requests for special information from time to time.

All our readers who may be in attendance at the meetings of the American Association for the Advancement of Science at Richmond, Virginia, are cordially invited to attend a conference December 27 at 7:15 p.m. in the Green Room of the Jefferson Hotel to participate in a discussion which may influence the future policy of the Reporter, especially insofar as its Supplements are concerned. Please attend if possible and frankly contribute your honest judgment for or against past policies.

This number will arrive during the rush of Yuletide preparations. We hope it will find you in comfortable anticipation of the holidays with your Christmas shopping all done (ours isn't) and that each of you may have a Merry Christmas and a Happy and Prosperous New Year.

H. A. Edson — Nellie A. Nance

Paul R. Miller — Mary G. Van Metter

Jessie D. Wood — Dora J. Vanderveen

OBSERVATIONS ON THE PREVALENCE OF POTATO DISEASES IN MAINE DURING 1938

Reiner Bonde

The season of 1938 was characterized by the presence of an abnormally large amount of potato diseases in Aroostook County, Maine. The seriousness of the virus disease problem can be appreciated by observing data supplied by the State potato seed certification service. Table 1 gives the acreages of potatoes of the different varieties entered for certification in 1938 and the number of acres and percentages that finally were accepted.

The chief reason for the high percentage of rejected seed stocks for certification was the presence of excessive amounts of leafroll. This disease occurred in epidemic proportions in 1938 as a result of an increase in the 1937 population of the peach aphid Myzus persicae[1/]. Leafroll was prevalent in all varieties excepting the Katahdin. Some mild mosaic was present in the Green Mountain variety, and rugose mosaic was abundant in some fields of Spaulding Rose. The Katahdin variety was relatively free of the virus diseases but had contracted wilt and soft rot which resulted in the rejection of some fields for certification.

Table 2 gives the amount of leafroll and mosaic found in some commercial potato fields. The disease counts were obtained from fields of different varieties selected at random and give a fair conception of the amount of virus diseases that were present in Aroostook County, Maine, in 1938.

It may be noted that leafroll was present in great amounts. Some would-be seed stocks were found to be from 70 to 82 percent infected with the disease. Experiments have shown that the dissemination of leafroll in Aroostook County is negligible in normal years. Of interest is the fact that the Katahdin variety did not become infected with leafroll under the same general conditions in which the other varieties became badly contaminated. The Chippewa variety, which originated from the same cross and seed ball as Katahdin, was very susceptible and only 14.5 percent of the acreage passed the requirements for certification.

The Spaulding Rose variety has normally been very resistant to the virus diseases in Aroostook County and is easily propagated in disease-free condition. In 1938 many fields of this variety were badly contaminated with leafroll and rugose mosaic, the latter appearing in some stocks to the extent that from 40 to 60 percent of the plants were infected.

1/ Information supplied by Dr. Geddes Simpson of the Maine Agricultural Experiment Station.

Table 1. Potatoes entered for seed certification in Maine in 1938 and acres and percentages of total finally accepted [a].

Variety	Acres entered	Acres passed	Percentage passed	Percentage rejected	Major reason for rejection
Green Mountain	11,541	5,200	45.0	55.0	Leafroll
Irish Cobbler	10,727	6,038	56.3	43.7	Leafroll
Spaulding Rose	861	350	40.6	59.4	Leafroll and rugose mosaic
Katahdin	2,638	1,439	54.5	45.5	Bacterial wilt and soft rot
Chippewa	4,099	593	14.5	85.5	Leafroll
All others	1,446	693	47.9	52.1	Leafroll

[a] Information from the State Department of Agriculture, Augusta, Maine.

Table 2. Leafroll and mosaic in 1938 in commercial potato fields [a].

Variety	No. of fields	Leafroll percent: Min.	Leafroll percent: Max.	Leafroll percent: Average	Mosaic percent: Min.	Mosaic percent: Max.	Mosaic percent: Average	Locations
Green Mountain	68	0	82	7.6	0	88	7.0	Leeds Jcn. to Ft.Fairfield
Irish Cobbler	12	1.5	29	7.8	0	1	0.3	Fairfield to Presque Isle
Chippewa	16	2	76	30.5	0	Trace	0	Aroostook
Katahdin	11	0	1	0.3	0	Trace	Trace	Aroostook
Rural	2	4	15	9.5	0	1	0.5	Ft.Fairfield
Spaulding Rose	31	0	80	7.6	0	60	12.6 [b]	Aroostook

[a] Summary of data secured by Donald Folsom and Reiner Bonde.
[b] Rugose mosaic was present in the Spaulding Rose variety. This disease generally is not disseminated extensively in Aroostook County, Maine.

Losses from Tuber Decay Caused by Phytophthora infestans

The season of 1938 was probably the most favorable for the development of late blight in the history of Aroostook County. Some field infection on the foliage was observed the first week in July and its spread continued throughout the entire season. Spraying and dusting were carried on more in earnest than ever before, and the control of blight in the fields seemed to be quite successful.

After the crop was dug, reports were received that the late blight rot was present in all parts of the County. Potato inspectors reported the greatest loss from decay that has occurred in years. In the Limestone area,

extreme shrinkage as reported from ten worst affected growers, was due to loss from rot averaging from 10 to 40 percent of the crop. The shrinkage encountered in the other potatoes stored at Limestone was 4 percent, and the average loss from late blight decay in the section is probably from 6 to 8 percent of the entire crop. Tuber decay was present to some extent in all of the late potatoes stored at Fort Fairfield and occasional lots showed 30 to 35 percent shrinkage. Similar losses from late blight rot occurred at Presque Isle, Washburn, Westfield, and Mars Hill. Several lots of potatoes in Mars Hill and Westfield had settled 2 feet after being in storage for several weeks, because of the potatoes decaying, and one bin in Bridgewater containing 900 barrels was a complete loss.

A questionnaire in regard to the presence of late blight rot was issued to farmers in Aroostook County. A reply was received from 511 of these farmers and 167 reported the presence of late blight at digging time. The amount of decay that was reported at digging time was from a trace to 3 percent. A considerable amount of rot developed in the bin after being in storage. The total amount of loss resulting from late blight decay is estimated at 5 or 6 percent of the crop for the entire County.

Bacterial Wilt and Soft Rot in Maine

This disease is claimed by Burkholder[2/] to be bacterial tuber ring-rot described previously in Germany. The disease described in Germany is caused by Phytomonas sepedonica (Spieckerm. and Kotth.) Bergey et al.

Bacterial wilt and soft rot was first discovered in Maine in 1932. It appeared in epidemic proportions in some localities in 1937 and again in 1938. The disease was present mostly in the Spaulding Rose variety in 1937. Records show that 315 acres or 28 percent of the total acreage of this variety entered for certification were affected. The infected fields in 1937 were limited to a rather small area in Aroostook County.

The amounts of bacterial wilt and soft rot found in lots of seed potatoes entered for certification in Maine in 1938 are given in Table 3. The disease was greatly reduced in the Spaulding Rose variety by planting disease-free seed stock. The enforcement of rigid rules by the certification service played a large part in cleaning up this variety. The bacterial wilt and soft rot disease in 1938 appeared mostly in the Katahdin variety and to some extent in Green Mountains. It is hoped that the continued enforcement of the certification rules will eliminate the disease from all varieties and check further spread.

2/ Burkholder, Walter H. The occurrence in the United States of the tuber ring rot and wilt of the potato. Amer. Potato Jour. 15: 243-245. 1938.

Table 3. Bacterial wilt and soft rot in potato seed stocks entered for certification in Maine in 1938.

Variety	Total acres examined	Acres affected	
		Number	Percent
Green Mountain	11,541	276	2.4
Irish Cobbler	10,727	0	0
Spaulding Rose	861	28[a]	3.3[a]
Katahdin	2,638	442	16.7

[a] The disease was known to have been present in these lots of seed stock before it was planted.

The Occurrence of Pink-Rot and Wilt in Maine

Pink-rot and wilt, caused by species of Phytophthora including P. erythroseptica Pethyb., occurs to a limited extent each year in Aroostook County, Maine. The disease generally is found in land that is poorly drained. It was quite common in 1938, the season being characterized by a rainfall that was considerably higher than normal.

The losses due to pink rot and wilt are difficult to estimate. They are negligible during dry years and may be of considerable importance in some fields if the season is wet. On Aroostook Farm, Presque Isle, Maine, certain parts of some low lying fields had 20 percent of the tubers affected. A bin of Bliss Triumph potatoes in nearby storage showed 10 percent of the tubers infected with pink-rot. The disease was present in small amounts in bins of stored potatoes located at Limestone and Easton. Growers claim that the stored lots showing this decay came from fields that had been subjected to wet conditions. The affected tubers have a dull, brownish color with darkened areas near the lenticels. The tubers remain firm and of a spongy nature. They become wet when squeezed in the hand, the water coming freely from the affected tissues in a manner simulating that of the leak disease. The diseased tissue is nearly normal in color immediately after being cut, but soon develops a pink color when exposed to air.

Affected plants in Aroostook County often become wilted and die early.

It has been shown (unpublished experiments) that the disease is soil borne on Aroostook Farm and persists in the soil for two or more years.

(Maine Agricultural Experiment Station).

THE KEEPING QUALITY OF WISCONSIN CRANBERRIES IN 1938

Neil E. Stevens

That the keeping quality of the 1938 crop of cranberries in Massachusetts would be very poor was forecast by H. F. Bergman on the basis of incubator tests made during the first half of September (P.D.R. 22: 397). He noted that the results of the 1938 tests corresponded closely with those of 1931, a year in which the Massachusetts crop was of very poor keeping quality. A few incubator tests of Wisconsin cranberries made during early September also showed high incidence of rot, and although, for reasons noted by Bergman, the crop has already been successfully marketed, it is apparent that losses from decay were much larger than last year when the crop was of high quality.

Direct comparison between the Wisconsin crops of 1937 and 1938 is made possible on a very limited basis by results of storage tests conducted for the purpose of comparing the keeping quality of a number of unnamed selections grown in the nursery near Wisconsin Rapids. Table 1 gives the percentage decay on November 15, both years.

Table 1. Average condition of storage lots of Wisconsin cranberries expressed as percent rotten berries, November 15.

	1937	1938
Average of 8 lots of unnamed selections	4.9	16.9
Average of 3 lots duplicated in both years	3.4	13.3

Although the selections represented in the first pair of figures were only in part identical, they were all grown in the same area and showed a wide variety of characteristics. The second pair of figures in the table is based on three lots of identical selections. In all cases the berries were hand picked during the second week in September and stored in the Chicago warehouse of the American Cranberry Exchange.

A direct comparison between the crops of 1931 and 1938 is not possible from any data available to the writer, but it may be worth while to note that the average percentage of rotten berries in eight storage lots of the Howes variety from representative bogs in the Wareham-Carver, Massachusetts area on November 15, was 14.1 in 1931, when the crop was notably poor, and 4.6 in 1934, when the crop was of very good quality. These differences are of much the same magnitude as those given above for Wisconsin berries in 1937-38, and serve to emphasize the fact already pointed out several times, that the margin between crops of "good" and "very poor" keeping quality may not be very great.

(Wisconsin Department of Agriculture and Markets).

DUTCH ELM DISEASE ERADICATION

(From Bureau of Entomology and Plant Quarantine weekly reports for the period from August 28 to December 3 inclusive).

The first 1938 Graphium ulmi confirmation in the Cumberland, Maryland-Wiley Ford, West Virginia area has been received. On November 8, a twin tree consisting of 2 ten-inch leaders was removed and burned during the selective cutting work. When the usual inspection of the tree took place discoloration was found and the tree was tagged OS-18786 and a specimen of the wood was prepared and sent to the Morristown laboratory. This tree was located in woodland in the vicinity of a previously confirmed tree, 5 feet from the Potomac River at Wiley Ford, Mineral County, West Virginia. The tree was uncared for and apparently of high vitality showing no outward symptoms of Graphium ulmi. (Week ending November 19).

A diseased tree reported during the week as located in Hamilton County, Indiana, is about 1,200 feet from the only other confirmed tree in that county. On October 4, the tree was found to be entirely dead and a root sample was submitted to the laboratory. The report from the laboratory was miscellaneous. On November 14, when the tree was eradicated, another sample was sent in to the laboratory as a recollect and this sample was confirmed. (Week ending December 3).

The number of trees confirmed during the period is as follows:

Connecticut	150
New Jersey	5,462
New York	289
Pennsylvania	4
Other	2
	5,907

BRIEF NOTES ON PLANT DISEASES

DOWNY MILDEW ON SPINACH IN EASTERN VIRGINIA: Mildew (Peronospora effusa) did not develop until later than usual this fall. Although cool nights and heavy fogs occurred frequently in October mildew infected plants were not found until October 31 and then only in two fields. On November 3 the disease was reported to be causing serious damage to the spinach crop on the Eastern Shore and by November 14 an extremely destructive outbreak had developed in the Norfolk area. Mildew continued to cause considerable damage until November 25 when the growth of the spinach and the progress of the disease were checked by abnormally low temperatures. (Harold T. Cook, December 9, Virginia Truck Experiment Station).

LEAF SCORCH OF APPLE TREES AND WHITE PINE AND OTHER CONIFERS PROBABLY CAUSED BY OCEAN SPRAY: In southwestern Maine, as in New Hampshire and Massachusetts where the writers happened to be driving, leaf scorching of apple trees and of white pines and certain other conifers, was seen to be correlated with exposure to a south wind from the ocean. The injury was absent on the lee side of all trees, on the ocean-facing side of protected trees, and on trees a few miles back from the coast. The explanation occurring to the writers was that the recent hurricane brought ocean spray inland abundantly enough to injure susceptible foliage. Folsom once observed severe injury to young potato stems in Bermuda following rubbing against the soil and application of ocean spray, by a moderately strong wind from the ocean a half mile distant. Other items in papers indicate ocean-spray residues in Montpelier, Vermont, on windows, and much foliage burning for "miles inland". (Donald Folsom and M. T. Hilborn, November 20. Maine Agricultural Experiment Station).

LEAF AND STEM RUSTS ON WHEAT AND OATS IN KANSAS: Despite the drought there has been considerable leaf and stem rust on volunteer wheat this fall. Early in September stem rust [Puccinia graminis] was abundant in the vicinity of Manhattan. The long period greatly reduced the amount of rust but some uredia still could be found on November 1. The stem rust of oats also was fairly abundant on volunteer oat plants. Leaf rust [P. rubigo-vera tritici] of wheat was difficult to find during the warm weather of October but now is fairly common on volunteer plants. In the writer's opinion the infections of both leaf and stem rust of wheat are due to oversummering urediospores rather than to spores blown in from the North. Infections obviously developed during August before there were sufficiently general north winds to carry spores into this area. Reports from Oklahoma state that both leaf and stem rust are abundant in that State. Most infections are primary in nature and the widespread distribution of such infections indicates a rather general oversummering of urediospores. (C. O. Johnston, Manhattan, November 10. Cereal Courier 30: 169. Nov. 25).

PEACH YELLOWS IN PENNSYLVANIA IN 1938: The 1938 peach yellows report of the Pennsylvania State Department of Agriculture, by K. W. Lauer, states that of a total of 447,597 peach trees inspected in six counties, 501, or .111 percent were found to be affected with yellows. The percentages in the different counties are, Bucks 0.749. Columbia 0.075, Cumberland 0.402, Franklin 0.023, Lebanon 0.507, Northumberland 0.677.

Mr. Lauer remarks, "It is of interest to note the continued increase in the average age of the trees inspected this year compared to the ages shown in the previous years. The average age of all peach trees inspected during the past sixteen years has increased from 5.66 years to 8.57 years. An increase of 2.91 years of life has been added to each tree under inspection during this sixteen year period."

NOVEMBER WEATHER

(From the Weekly Weather and Crop Bulletin for the week ending December 6, 1938).

Notwithstanding the abnormally cold weather during the last week of November, the temperature for the month as a whole averaged above normal quite generally from the Mississippi Valley eastward--see Figure 1. In nearly all areas the plus departures from normal ranged from about 2° to around 6°. The month had about-normal warmth in south Pacific sections, but otherwise over the western half of the country temperatures were subnormal, the greatest deficiencies appearing in the Great Basin of the West and the central Rocky Mountain States where the minus departures ranged from 3° to 7°

Figure 2 shows that November precipitation was markedly variable, though most stations in central and eastern States had above normal. The extreme Southeast was decidedly dry and there was less than normal in most sections from the central Lake region southward over the western Ohio Valley. The trans-Mississippi States had much more than normal, but in the Great Plains, especially from central Nebraska southward, precipitation was decidedly scanty. A large Southwestern area had very little rainfall during the month. In fact, the amounts were deficient quite generally west of the Rocky Mountains, except in the northern Great Basin. Record-breaking snowfall for November occurred the latter part of the month over a considerable Northeastern area.

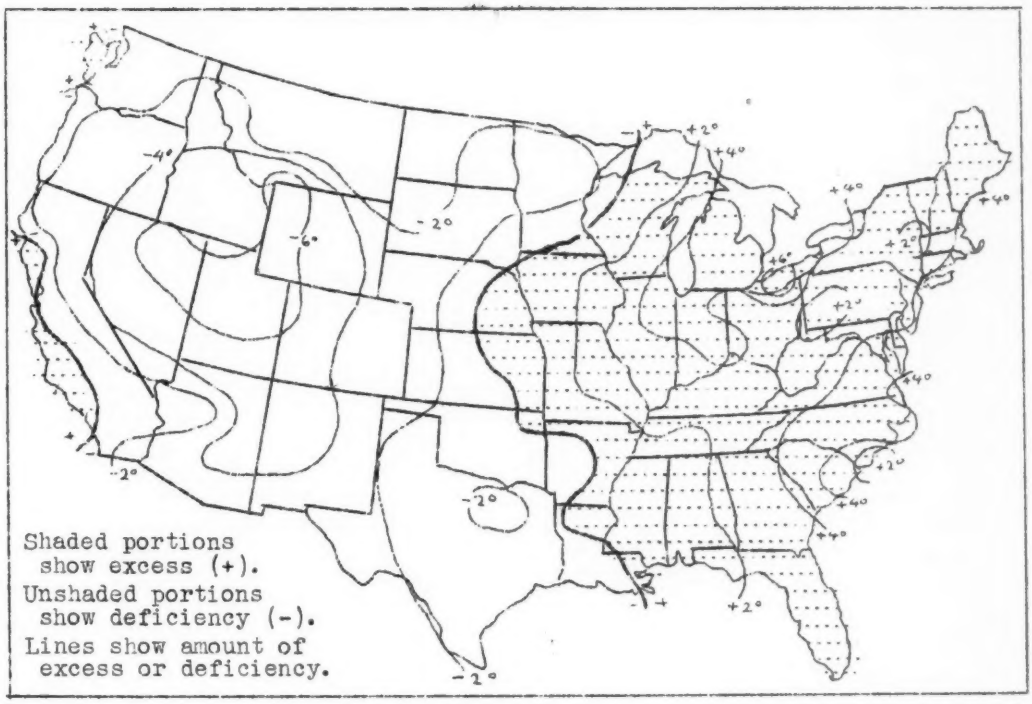

Fig. 1. Departure of Mean Temperature from the Normal for November 1938.

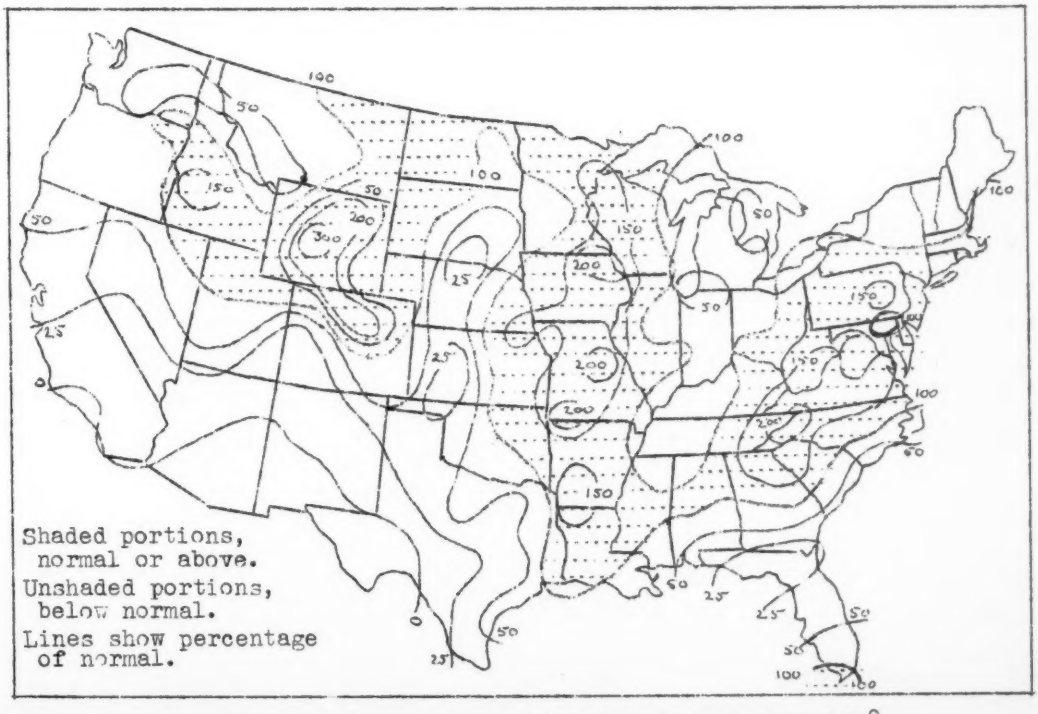

Fig. 2. Percentage of Normal Precipitation for November 1938.